

What is claimed:

- 1           1.       An optical component housing comprising a substrate having a  
2 substantially planar fiber mount region and an optical component mount region adjacent to  
3 the substantially planar fiber mount region.
- 1           2.       An optical component housing according to claim 1, wherein the  
2 substrate is selected from a group consisting of an aluminum oxide ceramic, a nickel-  
3 cobalt alloy, aluminum nitride ceramic, or silicon carbide ceramic.
- 1           3.       An optical component housing according to claim 1, further  
2 comprising a metallic mount pad formed over the substantially planar fiber mount region  
3 and configured to bond to a metal solder.
- 1           4.       An optical component housing according to claim 3, further  
2 comprising a metallized optical fiber coupled to the metallic mount pad by the metal  
3 solder.
- 1           5.       An optical component housing according to claim 1, further  
2 comprising a fiber mount pad formed over the substantially planar fiber mount region and  
3 configured to bond to a glass solder.
- 1           6.       An optical component housing according to claim 5, further  
2 comprising a bare optical fiber coupled to the fiber mount pad by the glass solder.
- 1           7.       An optical component housing comprising a substrate having an  
2 optical component mount aperture formed therein and a substantially planar fiber mount  
3 region formed on the substrate and adjacent to the optical component mount aperture.
- 1           8.       An optical component housing according to claim 7, further  
2 comprising an optical component placed within an area defined by the optical component  
3 mount aperture.

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1                   9.     An optical component housing according to claim 8, further  
2 comprising a metallic mount pad formed over the substantially planar fiber mount region  
3 and configured to bond to a metal solder.

1                   10.    An optical component housing according to claim 9, further  
2 comprising a metallized optical fiber coupled to the metallic mount pad by the metal solder  
3 to optically couple the fiber and the optical component.

1                   11.    An optical component housing according to claim 8, further  
2 comprising a fiber mount pad formed over the substantially planar fiber mount region and  
3 configured to bond to a glass solder.

1                   12.    An optical component housing according to claim 11, further  
2 comprising a bare optical fiber coupled to the fiber mount pad by the glass solder to  
3 optically couple the fiber and the optical component.

1                   13.    A fiber-coupled optical component comprising:

2                   a substrate formed from a semiconductor of a first conductivity type and  
3 having an optical component region and a substantially planar fiber mount region adjacent  
4 to the optical component region;

5                   an active layer selected from a group consisting of a bulk gain material and  
6 a quantum well structure formed on the substrate over the optical component region;

7                   a semiconductor layer of a second conductivity type different from the  
8 substrate, the semiconductor layer formed over the active layer;

9                   an electrode layer of a high conductivity material formed over the  
10 semiconductor layer; and

11                  an optical output coupler formed on a surface of the active layer to provide  
12 radiation emitted from the active layer.

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1                   14.     A fiber-coupled optical component according to claim 13, further  
2 comprising a metallic mount pad formed over the substantially planar fiber mount region  
3 and configured to bond to a metal solder.

1                   15.     A fiber-coupled optical component according to claim 14, further  
2 comprising a metallized optical fiber coupled to the metallic mount pad by the metal solder  
3 to optically couple the fiber and the optical output coupler.

1                   16.     A fiber-coupled optical component according to claim 13, further  
2 comprising a fiber mount pad formed over the substantially planar fiber mount region and  
3 configured to bond to a glass solder.

1                   17.     A fiber-coupled optical component according to claim 16, further  
2 comprising a bare optical fiber coupled to the fiber mount pad by the glass solder to  
3 optically couple the fiber and the optical output coupler.

1                   18.     A method for forming a fiber-coupled optical component housing,  
2 comprising the steps of:

3                   a)     forming a ceramic substrate;

4                   b)     forming an optical component mountable aperture on a surface of the  
5 substrate;

6                   c)     forming a substantially planar fiber mount region on a surface of the  
7 ceramic substrate and adjacent to the optical component mountable  
8 aperture; and

9                   d)     placing an optical component within an area defined by the optical  
10 component mountable aperture.

1                   19.     A method according to claim 18, further including the steps of:

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- 2 e) forming a metallic mount pad over the substantially planar fiber  
3 mount region and configuring said mount pad to bond with a metal  
4 solder; and
- 5 f) securing a metallized optical fiber to the metallic mount pad by the  
6 metal solder to optically couple the fiber and the optical component.
- 1 20. A method according to claim 18, further including the steps of:
- 2 e) forming a fiber mount pad over the substantially planar fiber mount  
3 region and configuring said mount pad to bond with a glass solder;  
4 and
- 5 f) securing a bare optical fiber to the fiber mount pad by the glass  
6 solder to optically couple the fiber and the optical component.
- 1 21. A method for forming a fiber-coupled optical component, comprising  
2 the steps of:
- 3 a) forming a substrate from a III/V semiconductor material of a first  
4 conductivity type;
- 5 b) forming an active layer selected from a group consisting of a bulk  
6 gain material and a quantum well structure, the active layer being  
7 formed over a portion of the substrate;
- 8 c) forming a semiconductor layer over the active layer from a III/V  
9 material of a second conductivity type different from the substrate;
- 10 d) forming an electrode layer over the semiconductor layer from a high  
11 conductivity material;
- 12 e) forming a substantially anti-reflective optical output coupler on a face  
13 of the active layer; and

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14 f) forming a substantially planar fiber mount region on a surface of the  
15 substrate and adjacent to the optical output coupler.

1 22. A method according to claim 21, further including the steps of:

2 g) forming a metallic mount pad over the substantially planar fiber  
3 mount region and configuring said mount pad to bond with a metal  
4 solder; and

5 h) securing a metallized optical fiber to the metallic mount pad by the  
6 metal solder to optically couple the fiber and the optical output  
7 coupler.

1 23. A method according to claim 21, further including the steps of:

2 g) forming a fiber mount pad over the substantially planar fiber mount  
3 region and configuring said mount pad to bond with a glass solder;  
4 and

5 h) securing a bare optical fiber to the fiber mount pad by the glass  
6 solder to optically couple the fiber and the optical output coupler.

1 24. An optical component housing comprising:

2 a high thermal conductivity base;

3 a low thermal conductivity substrate having a substantially planar fiber  
4 mount region therein and abutting the high thermal conductivity base with a surface at the  
5 same level as the base;

6 an unpackaged optical component mounted on the base adjacent to the  
7 aperture, said component having a top surface metallized to serve as an electrode.

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1           25.    The optical component housing according to claim 24, further  
2 comprising a metallized fiber mount pad formed over the substantially planar fiber mount  
3 region, and a metallized optical fiber mounted to the fiber mount pad with a metal solder.

1           26.    The optical component housing according to claim 24, further  
2 comprising a fiber mount pad formed over the substantially planar fiber mount region and  
3 configured to bond to a glass solder, and a bare optical fiber mounted to the fiber mount  
4 pad with a glass solder.